

PATHFINDER

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An informal newsletter produced for the GPS user community by Army PM GPS, Fort Monmouth, NJ. Information presented is based on published and submitted news items of interest to the general user. Widest dissemination and reproduction is encouraged. Newsworthy items are solicited for inclusion. Editor Mr. Don Mulligan at PM GPS, Ft Monmouth NJ DSN 992-6137 or (732) 532-6137 or email: Donald.Mulligan@mail1.monmouth.army.mil

The PATHFINDER can be found online at the PM GPS web page: <http://army-gps.robins.af.mil>

PM' Corner

Hello GPS Users!



Is your GPS equipment mission-ready? Have you run through a pre-mission checklist lately? You can find useful checklists in both

the official TM (the current version is dated April 2001) and in the "PLGR Soldiers Guide." If you want a basic refresher on operating PLGR, get the "PLGR Made Simple" pamphlet.

These items are available through standard publications channels (stock numbers listed elsewhere in this newsletter).

During 2002 we will continue our work on the next generation of GPS equipment. The unclassified information in the "Product Line

Update" article gives you a good idea of the scope of Army activity here at the Joint Program Office.

In addition to next generation equipment we remain committed to supporting the current product line. PLGR remains the primary GPS device for most Army users whether handheld, mounted in a vehicle or integrated to a weapons system. It pays to practice and stay familiar with operating PLGR so I suggest you put it in your training schedule. As always, I invite you to contact me directly via the California office!

LTC Eveland

Update on the Deferred Maintenance Program for PLGR

In the last two issues, we reported on a change in the PLGR depot maintenance program. The change is now in effect. To recap, there are insufficient funds to automatically repair all PLGR damaged outside of warranty coverage. The warranty for Army and USAF PLGR was extended so most PLGR repairs are being performed promptly just as they have been for over 7 years. However, to allow for the funding limitation, a priority repair system is now in place and we have used that system to place some PLGR in deferred maintenance. How is it going so far?

In the first 30 days of the deferred maintenance program, 587 PLGR entered the repair cycle. Of these, 351 were deemed exclusions to warranty. Of the exclusions, 23 were beyond economical repair and 81 were placed in the deferred maintenance program.

Some PLGR may be in deferred maintenance for over a year, so owning units were provided letters allowing them to remove the designated serial numbers from their property books and to submit a requisition to B-16 (with special instructions).

It is anticipated that deferred maintenance actions will occur for some time, but it is still important that all non-operational PLGR requiring depot maintenance be turned in for several reasons:

- a. The PLGR may be under warranty and will automatically be replaced. (You can't go by the warranty expiration date since the warranties were extended and it

was impractical to try to issue new stickers).

- b. Your unit may qualify for priority replacement.
- c. Useable parts from PLGR that cannot be repaired may be recovered and used in support of depot level repair.
- d. PLGRs that are no longer serviceable must be demilitarized at the only authorized Depot, which is Rockwell Collins, Inc.
- e. Once funds are available for repair, the replacements will be issued on a first, come first serve basis and then another cycle will start.

Do not attempt any unauthorized repair, as this will void the warranty and incur additional costs that will further delay the repairing of any PLGR in deferred maintenance.

POC Suzanne Reinhardt-Smith at Fort Monmouth, DSN 992-5758.

Army GPS Product Line Update

What's new with the family of authorized military GPS User Equipment?

The AN/PSN-11(V) Precision Lightweight GPS Receiver (PLGR) remains the primary GPS receiver for handheld, vehicle-mounted and weapons-system installed use. The Total Army requirement for PLGR exceeds the available supply, but PM GPS recently took delivery of a shipment of new PLGR which are now being fielded to high priority units. PLGR is going to be around for awhile and warranty coverage was extended.

Ignore the expiration date on the warranty label and turn in any faulty or damaged PLGR. See the article on warranty coverage elsewhere in this issue.

The AN/ASN-169 Standalone Airborne GPS Receiver (SAGR) is in limited use by selected Army aircraft. SAGR is no longer covered by a warranty, so if you are an authorized operator and observe the "low memory battery" indicator or have other problems, contact Joe Meskill at Fort Monmouth for assistance (DSN 992-6134)

The AN/ASN-175 Cargo Utility GPS Receiver (CUGR) provides advanced GPS aircraft navigation system capabilities to a variety of US Army aircraft. Warranties expire in June - October 2003 - if you have a faulty set, send it in for repair. If you are not operating the current version software, V0102A, contact Don Mulligan at Fort Monmouth for assistance (DSN 992-6137).

No news to report on the remaining low-density Army authorized GPS equipment:

- AN/ASN-149(V) for selected aircraft.
- AN/GSN-13 Precision Survey receiver for topographic units.
- AN/ASN-163 Miniaturized Airborne GPS receiver (MAGR) for selected aircraft.

As for the new products that are "in the pipeline":

The Defense Advanced GPS Receiver (DAGR) will be going into bid sample testing prior to contract award and we forecast fielding to begin in FY04. DAGR will do everything PLGR does, but with improved technology and reduced size and weight.

The GPS Receiver Application Module (GRAM) will also proceed to pre-award evaluation this year, leading to first deliveries in FY03. The GRAM is "GPS on a card" that will allow many different communications, computer and weapons systems to internalize GPS and discontinue the use of a PLGR connected by cable.

I heard that the Government said GPS can't be relied upon. What's up?

A recent US Department of Transportation (DOT) report assessed the "vulnerabilities of transportation infrastructure that rely upon GPS." Publication of this report was followed by several news articles that cited the "danger" of relying on GPS. What is this all about? In short, it's nothing new.

The DOT was merely telling civil users what the military user already knew: Since GPS operates on low power line-of-sight radio signals broadcast from satellites, the signals are relatively weak and they travel great distances. Therefore, it is no surprise that GPS signals are susceptible to atmospheric distortion and interference. As a military user, you already know that you must be sensitive to potential signal interference, either accidental (e.g. proximity to a high power emitter) or intentional (e.g. a hostile effort to jam or spoof the signal). Again, this is nothing new to the military user. These are the fundamental reasons why you use Precise Positioning Service (PPS) rated GPS equipment which gives you an edge over commercial equipment that uses the Standard Positioning Service (SPS) signal. This is also why you consider proximity to other receiver/transmitters, terrain masking and the effect of dense overhead vegetation when operating

GPS receivers. Good antenna position that allows access to four or more satellite signals reduces the impact of interference with any one signal!

The DOT report talked about the design weakness of commercial GPS receivers. Remember that military users have a greater degree of signal accuracy and protection thanks to the use of the Precise Positioning Service (PPS) signal. This means protection from spoofing and jamming although the military user will still be subject to some signal distortion and interference problems. The military user who is sensitive to receiver placement and surrounding terrain can reduce the impact of these potential interferences and get effective GPS support for mission performance. The next generation of military GPS equipment will incorporate new security and performance technology to provide military users with greater signal protection under accidental or hostile interference.

DAGR Update

Over the last three months we conducted a series of "user survey" events where we asked Army soldiers to pick up sample versions of the new handheld GPS receiver and tell us what they liked and did not like. We want to express our appreciation for all the participation we received at several Army installations. Rest assured that your comments were taken to heart and will be considered as we evaluate the DAGR candidates. If you have any questions about the DAGR program, contact MAJ Keith Hirschman at the Los Angeles office, DSN 833-2925.

Updated

Nomenclature Listing
for GPS Equipment

PM GPS has updated the master nomenclature listing of GPS User Equipment managed by the Joint System Support Management Office (JSSMO) at Warner Robins, GA. The list identifies the NSN, part number, Item Manager code and other details for all of the joint-service user equipment, past and present, managed by JSSMO. The nomenclature list may be requested from the Georgia Field Office.

POC: Willie Jackson, DSN: 468-3518

PLGR Warranty Status

If the cereal box is stamped "Best Before Aug 97" you'd probably throw it out, right? If the warranty on your washing machine is expired, you might get a screwdriver and do a little exploratory surgery to see if you can find out what part broke, right?

If your PLGR warranty label shows a date that has passed, you may as well pry open the receiver to see if you can fix it, right? No, because Army and USAF PLGR warranties were extended so you should disregard the expiration date on the label! Besides, you will not find the right parts at Radio Shack and the manufacturer won't sell parts direct. So don't open the PLGR! Turn it in for repair. Chances are, the damage is covered by the warranty and you'll get a serviceable replacement free of charge.

Notice for USN and USMC operators: Although your PLGR warranty coverage was not extended, the Navy Department did provide central funding to pay for all repairs (unless the set is damaged beyond repair). Therefore you can disregard the expiration date on the PLGR warranty label. If you have a faulty or damaged PLGR, turn it in for credit and requisition a replacement through Navy supply. Do not attempt to

fix it yourself and do not send it to disposal.

Last call for Input on FAQ Section

We have assembled a list of GPS related Frequently Asked Questions (FAQ). Before we release the document we invite comment from field users. If you have time, please email James Buggy and we will send you the FAQ list for review. If you feel there is a question missing, let us hear from you! We'd like to "go final" with the FAQ list by March 2002. The list will be accessible via the Army GPS website. You will also be able to request a copy by email, phone or fax to any PM GPS office. We hope the FAQ will provide the quick answer to typical "nuts and bolts" questions about operation and support of GPS equipment. However, you will still need to refer to your TM or the PLGR Soldiers Guide to find answers to less often asked questions!

Update on PLGR Installations

In the last issue we discussed the modified PLGR mounts installed to Paladin and FAASV vehicles to reduce the risk of damage to the weapon system computer which occurred when the PLGR power and data connections were not made in the correct order. Some field users found the modified mount provided intermittent power to PLGR and used duct tape to bypass the modification.

Picatinny Arsenal Quality Assurance personnel conducted a field investigation and determined that many of the plunger switches were not installed in accordance with the proper specification which explains why the user was getting intermittent power. PM Paladin is pursuing the investigation to develop corrective action to provide PLGR mounts that protect the weapon system computer.

On a related action, PM GPS has initiated an effort to develop a PLGR External Protection Module (EPM) to protect the

Paladin computer from power spikes transmitted through the PLGR. The EPM may be useful for other PLGR installations where the host platform needs similar protection. We will report on the availability of the EPM in a future issue or you can contact the Georgia office.

POC: William Burnette, Jr.

DSN 468-1109

GPS Software: No News is Good News!

There are no "brand new" software releases for Army GPS systems as of this date. We are in the final approval stage for a special application of PLGR software that will go to a very limited number of Army units for use with the VIPER program. Most PLGR users should be operating with one of the two software versions listed below. If your PLGR does not display one of these version numbers when powered-up, contact your maintenance shop, CECOM LAO or PM GPS to get reprogrammed.

For the standard US military issue PLGR (either NSN): Software version 613-9854-003 or 613-9544-008.

(If your PLGR displays a version number that ends in 002 or 007 you very likely need reprogramming to update your software.)

Frank Rowe at Georgia Field Office DSN
468-9511

What's the Current PLGR TM?

The PLGR technical manual was updated last year. The current version carries a publication date of April 2001.

Army TM 11-5825-291-13
USAF TO 31R4-2PSN11-1
USMC PCN 60000282000
Navy EE174-AA-OMI-010/PSN-11

Update on PLGR Sustainment Training CD

The Product Manager for the upgraded Bradley Fighting Vehicle, the "Linebacker," developed a CD-based unit training package to support the new system. Disk 2 of the CD set specifically addresses common operation of the PLGR. It's a great tool that you can use on your PC for refresher training on PLGR basics. You can obtain a copy by contacting either PM GPS or the Army Training Support Center at Fort Eustis, VA (Jack Becker at DSN 927-4682). Meanwhile, Army PM GPS staff at the Georgia Field Office is finishing up a new PLGR tutorial that will be released on CD later this year.

Willie Jackson at Georgia
DSN 468-3518

GPS and the World Trade Center Attacks

You probably read about the use of commercial handheld GPS receivers by the terrorists who attacked New York last September. That was a sad example of good technology being used for an evil purpose. On the positive side, GPS has been in use since shortly after the attacks by New York City firefighters as they map the debris at the 16 acre WTC site. Handheld computers equipped with GPS are being used to record item descriptions for each item and tag them with a GPS-determined position location along with a bar code and identifying number. The data collected on thousands of items will support detailed mapping of the WTC site in support of ongoing investigations.

GPS is also commonly part of the coalition effort to attack the Taliban since it is used in a wide variety of precision guided missions. GPS is also

used to aid target identification and position reporting by ground troops in Afghanistan. The bad guys may have used GPS when they started this incident but Allied forces are making great use of GPS on a daily basis to prosecute the war with a high degree of accuracy and minimal collateral damage.

Update on Desert Storm Era GPS Equipment

This update deals with the AN/PSN-10 Small Lightweight GPS Receiver (SLGR) and the upgraded version known as the AN/ASN-169 Stand-alone Airborne GPS Receiver (SAGR). These sets are nearing the end of their useful service lives.

SLGR Background: SLGR was issued during Operation Desert Storm, but beginning in 1994 it was displaced by the AN/PSN-11 Precision Lightweight GPS Receiver (PLGR). By 1998, the only remaining authorized SLGR users were lower priority ground units and some aviation units waiting for installation of military-rated GPS. SLGR is a commercial grade receiver, not authorized for use in combat or combat support operations.

SAGR Background: In 1996, about 1,000 SLGR were rebuilt into SAGR with a crypto-variable capability to allow them to utilize the military GPS signal. The SAGR was distributed for interim use on Army aircraft deployed overseas. After 2000 the SAGR was restricted to some aviation units pending installation of more advanced GPS systems.

As of 2002, formal repair support for SLGR and SAGR was suspended by CECOM. PM GPS will coordinate limited repair support for these products on a case-by-case basis. This support will only be provided to the remaining registered aviation users.

If you have any SLGR or SAGR on your property book, contact us! We will provide the authorization to remove the equipment from your property books as well as

disposition instructions. Do not send GPS equipment to the DRMO!

If you have any of these receivers but they are not on your Property Book, ship them directly to the address below using a DD Form 1149. Please provide us a copy by fax.

For more information contact Mr. Joe Meskill at our Ft Monmouth, NJ office. DSN: 992-6134, Commercial: (732) 532-6134. The FAX extension is 6299.

Please note that couriers such as FedEx or UPS do not deliver to a post office box; so make sure you use the right address depending on how you ship the equipment!



By Courier
(FedEx, UPS)

NewTec
Bldg. 91302, AVIONICS
Lab Annex (GPS)
Attn: Steve Robinson
Fort Huachuca, AZ 85613

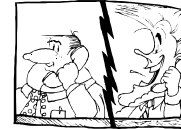
DODAAC: C1GMPK
Phone: DSN 879-2877
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Johnny.Walker@ROBINS.AF.MIL

Or contact the Pathfinder editor via
email address at front of newsletter and
we will route your question to the
appropriate office for response.

Who To Call?



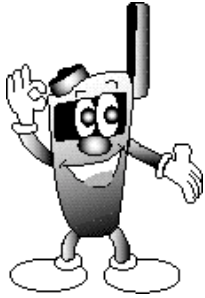
For GPS integration
assistance and new
product information, call
TMD.

For sustainment issues including help
with software, supply, technical
publications, accessory procurement
and training call GFO.

For equipment authorizations, fielding,
host vehicle installation and New
Equipment Training call RMD.

PLGR PUBLICATIONS

PLGR TM	TM 11-5825-291-13
PLGR Soldiers Guide	TB 11-5825-291-10-2
PLGR Quick Reference Guide	TM 11-5825-291-10
PLGR Made Simple	TB 11-5825-291-10-3
(The PLGR tutorial CD is still in development)	



Did You See these GPS Articles in PS Magazine During 2001?

Topic	Issue	Page
PLGR Batteries	580	48
PLGR External Power Cables	589	44
PLGR Warranty	584	52
GPS Newsletter	579	53
PLGR Transit Case	587	53

PS Magazine is your Preventive Maintenance Monthly magazine, TB 43-PS-590

A lot of readers have exercised this option! We repeat the invitation to convert to “soft” copy distribution!

Not getting the PATHFINDER anymore? Postal authorities at some installations are cracking down on mail that does not have a “complete” street delivery address. As a result, your copy of PATHFINDER might have been returned to us marked “incomplete address.” Without a practical way of reaching you, we can only delete you from our database and hope you resubmit your address.

If you are a deployable military unit, active or reserve, please contact us to provide a complete mailing address so we can resume mailing the newsletter to you! If you prefer to receive the email notice described below, say so!

If you are an installation or TDA activity, a member of AMC, TRADOC or other government organization with an email account, please provide your email account and “PATHFINDER request” in the subject line. We prefer to send email notice to non-deployable readers to reduce the cost of printing and postage. You will receive an email notification when each issue is posted along with the URL link to our website so you can pull down the new issue at your convenience.

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